

CLAIMS

1. In a mobile station, a method of facilitating the determination of Global Positioning System (GPS) location information without disrupting voice communications of a voice call involving the mobile station comprising the acts of:
- 5 causing GPS navigational-type data to be received and stored in memory of the mobile station prior to voice communications of a voice call involving the mobile station;
- receiving a voice call request at the mobile station for a voice call through a
- 10 wireless communication network;
- after receiving the voice call request:
- deriving GPS assistance data based on the stored GPS navigational-type data;
- causing a GPS fix to be performed with signals from a GPS system
- 15 using the GPS assistance data to thereby obtain GPS measurement data;
- causing the voice call to be established and maintained for the mobile station through the wireless communication network; and
- causing the GPS measurement data to be transmitted to a location server in the wireless communication network for calculating the location of
- 20 the mobile station.
2. The method of claim 1, wherein the voice call comprises a 911 emergency call.
- 25 3. The method of claim 1, wherein the act of causing the GPS navigational-type data to be received and stored in memory of the mobile station comprises the further acts of regularly causing the GPS navigational-type data to be received and stored in the memory during one or more time periods that the mobile station would have otherwise been in an idle mode of operation.

4. The method of claim 1, wherein the act of causing the GPS navigational-type data to be received comprises the further act of causing the GPS navigational-type data to be received from the location server.

5 5. The method of claim 1, wherein the act of receiving the voice call request at the mobile station comprises the further act of receiving the voice call request through a user interface of the mobile station.

6. The method of claim 1, further comprising:
10 identifying a trigger signal indicative of the voice call request at the mobile station;

wherein the act of identifying the trigger signal includes at least one of the following: identifying a detection of the mobile station being taken out of a holster, identifying a selection of a phone application of the mobile station, identifying a
15 selection of one or more digits of a telephone number for the voice call, identifying a selection of entry of the telephone number for the voice call, and receiving the trigger signal from a personal computer (PC) or laptop; and

wherein the act of causing the GPS fix to be performed is in response to the act of identifying the trigger signal.

20

7. The method of claim 1, further comprising:
identifying a phone number of the voice call; and

wherein the act of causing the GPS fix to be performed is contingent on the phone number of the voice call.

25

8. The method of claim 1, wherein the GPS navigational-type data comprises GPS ephemeris data and/or GPS almanac data.

9. The method of claim 1, wherein the GPS assistance data comprises at
30 least one of: GPS satellite PseudoRandom Noise (PRN) code identifying data,

Doppler frequency data, time delay window data, and bit contents of the GPS navigational data.

10 10. The method of claim 1, wherein the GPS measurement data comprises
5 GPS pseudorange data.

 11. The method of claim 1, wherein the location server includes a Position
Determination Entity (PDE).

10 12. The method of claim 1, further comprising:
 receiving the location of the mobile station from the location server through
the wireless communication network.

 13. The method of claim 1, further comprising:
15 refraining from causing the GPS fix to be performed during the voice
communications of the voice call.

 14. The method of claim 1, wherein at least a portion of the same wireless
receiver is utilized for both acts of performing the GPS fix and causing the voice call
20 to be established and maintained.

 15. A mobile station, comprising:
 a user interface;
 a wireless receiver and transmitter;
25 one or more processors coupled to the wireless receiver and transmitter;
 memory coupled to the one or more processors;
 the one or more processors being operative to facilitate the determination of
Global Positioning System (GPS) location information of the mobile station by:
 causing GPS navigational-type data to be received through the wireless
30 receiver and stored in the memory prior to voice communications of a voice
call involving the mobile station;

receiving, through the user interface, a voice call request for the voice call through a wireless communication network;

after receiving the voice call request:

5 deriving GPS assistance data based on the GPS navigational-type data;

causing, with use of the wireless receiver, a GPS fix to be performed with a GPS system using the GPS assistance data to thereby obtain GPS measurement data based on signals from the GPS system;

10 causing, with use of the wireless receiver, the voice call to be established and maintained for the mobile station through the wireless communication network; and

causing, with use of the wireless transmitter, the GPS measurement data to be transmitted to a location server in the wireless communication network for calculating the location of the mobile station.

15

16. The mobile station of claim 15, wherein the voice call comprises a 911 emergency call.

20 17. The mobile station of claim 15, wherein the causing of the GPS navigational-type data to be received and stored in the memory is performed on a regular basis during one or more time periods that the mobile station would have otherwise been in an idle mode of operation.

25 18. The mobile station of claim 15, wherein the causing of the GPS navigational-type data to be received comprises causing the GPS navigational-type data to be received from the location server through the wireless communication network.

30 19. The mobile station of claim 15, further comprising:

identifying a trigger signal indicative of the voice call request at the mobile station;

wherein the act of identifying the trigger signal includes at least one of the following: identifying a detection of the mobile station being taken out of the holster, identifying a selection of a phone application of the mobile station, identifying a selection of one or more digits of a telephone number for the voice call, identifying a selection of entry of the telephone number for the voice call, and receiving the trigger signal from a personal computer (PC) or laptop; and

wherein the act of performing the GPS fix is in response to the act of identifying the trigger signal.

20. The mobile station of claim 15, wherein the one or more processors are further operative to:

identify a phone number of the voice call; and

wherein the act of performing the GPS fix is contingent on the phone number of the voice call.

21. In a mobile station, a method of facilitating the determination of Global Positioning System (GPS) location information without disrupting voice communications of a voice call comprising the acts of:

identifying a trigger signal indicative of a request to terminate a voice call which is maintained for the mobile station;

in response to identifying the trigger signal:

causing a GPS fix to be performed with a GPS system using GPS assistance data to thereby obtain GPS measurement data;

causing the GPS measurement data to be transmitted to a location server in the wireless communication network for calculating the location of the mobile station; and

causing the voice call to be terminated.

22. The method of claim 21, wherein the voice call comprises a 911 emergency call.

23. The method of claim 21, further comprising:
5 causing the GPS assistance data to be received in response to identifying the trigger signal.

24. The method of claim 21, further comprising:
refraining from causing the GPS fix to be performed during the voice
10 communications of the voice call.

25. The method of claim 21, wherein at least a portion of the same wireless receiver is utilized for performing the GPS fix and maintaining the voice call.

15 26. The method of claim 21, further comprising:
identifying a phone number of the voice call; and
wherein the acts of causing a GPS fix and causing the GPS measurement data to be transmitted before ending the voice call is contingent on the phone number for the voice call.

20 27. The method of claim 21, wherein the trigger signal is based on an actuation of an END key.

25 28. A mobile station, comprising:
a user interface;
a wireless receiver and transmitter;
one or more processors coupled to the wireless receiver and transmitter;
memory coupled to the one or more processors;
the one or more processors being operative to facilitating the determination of
30 Global Positioning System (GPS) location information for the mobile station without disrupting voice communications of a voice call by:

identifying a trigger signal indicative of a request to terminate the voice call which is maintained for the mobile station;

in response to identifying the trigger signal:

5 causing a GPS fix to be performed based on signals of a GPS system using GPS assistance data, to thereby obtain GPS measurement data;

causing the GPS measurement data to be transmitted to a location server in the wireless communication network for calculating the location of the mobile station; and

10 causing the voice call to be terminated.

29. The mobile station of claim 28, wherein the voice call comprises a 911 emergency call.

15 30. The mobile station of claim 28, wherein the one or more processors are further operative for:
causing the GPS assistance data to be received in response to identifying the trigger signal.

20 31. The mobile station of claim 28, wherein the one or more processors are further operative for:
refraining from causing the GPS fix to be performed during the voice communications of the voice call.

25 32. The mobile station of claim 28, wherein at least a portion of the same wireless receiver is utilized for performing the GPS fix and maintaining the voice call.

30 33. The mobile station of claim 28, wherein the one or more processors are further operative for:
identifying a phone number of the voice call; and

wherein the acts of causing the GPS fix and causing the GPS measurement data to be transmitted before ending the voice call is contingent upon the phone number for the voice call.

- 5 34. The mobile station of claim 28, wherein the trigger signal is based on an actuation of an END key at the user interface.